

Department : Clinical Laboratory Sciences
Course Number : CLS 311
Course Title : Basic Microbiology
Credit Hours : 3 + 1 = 4

Course Description:

This course provides the students with basic theoretical and practical aspects of various groups of microorganisms to include bacteriology, virology, mycology, and parasitology as well as basic concepts of immunology and epidemiology. It also introduces the basic concepts of disinfectants, antiseptics, preservatives, Ames test, methods of sterilization, aseptic techniques and general microbial control.

CLS 311: Lectures Outline

Weeks	Subjects
1.	General introduction to Microbiology Historical background and Classification of Microorganisms
2.	Introduction to Viruses: Classification, morphology and structure, Replication and Pathogenicity
3.	Introduction to Fungi: Classification, morphology and structure, Replication and Pathogenicity
4.	Introduction to Parasites: Classification, General Characteristics of parasites and Medically important Parasites
5.	Introduction to Bacteria: Classification, Morphology and Structures
6.	Bacterial Structures
7.	Microbial Growth requirements: Nutritional requirements, Physical requirements, Types of bacteria according to energy production
8.	Bacterial Growth: Growth curve, Constant and synchronous growth

9. Bacterial Metabolism: Catabolic Pathways and regulation
10. Bacterial Genetics:
Mutation and mutagenic agents ,&Ames test
Gene transfer ,PCR ,& genetic engineering
11. Bacterial Genetics continued
12. Microbial Control:
Principles, Disinfectants, antiseptics, and preservatives
Physical and chemical methods of sterilization Aseptic techniques
13. Microbial control continued...
14. Pathogenicity of Infectious Diseases
15. Normal Microbial flora

CLS 311: Laboratory Schedule

Weeks	Subjects
1.	Introduction to Microbiology laboratory techniques and safety rules
2.	Introduction to Microscopy Types of Microscopes.
3.	Examination of Stained Smear and Wet Preparation.
4.	Microscopic examination of Eucaryotic microorganisms .
5.	Staining of Bacterial Cells (simple staining)
6.	Staining of Bacterial Cells (differential staining)
7.	Preparation and Types of Culture Media
8.	Bacterial Culture Techniques Colonial Morphology
9.	Bacterial Count (Total & Viable)
10.	Factors Affecting Microbial Growth

11. Physical and chemical methods used in microbial control
12. **Revision**
13. **FINAL PRACTICAL EXAMINATION**

Assessments:

Mid Term Examination: Written	20
Mid Term Examination: Practical	15
Attendance and Reports:	5
Final Practical Examination:	20
Final Theoretical Examination:	40

References:

1. Cossart, P., P. Boquet, S. Normark, and R. Rappuolo. **Cellular Microbiology**. ASM Press, Washington, DC, 2000.
2. Kaufmann, S. H. E., A. Sher and R. Ahmed. **Immunology of Infectious Diseases**. ASM Press, Washington, DC, 2001.
3. Madigan, M. T., Martinko, J. M., and J. Parker. **Brock Biology of Microorganisms**. Prentice Hall, Upper Saddle River, NJ, 1997
4. Mims, C., A. Nash, and J. Stephen. **Mims' Pathogenesis of Infectious Disease**. Academic Press, San Diego, CA. 2001.
5. Prescott, L. M., J. P. Harley, and D. A. Klein. **Microbiology** (3rd edition) Wm. C. Brown Publishers, Dubuque, IA, 1996.
6. Salyers, A. A. and D. D. Whitt. **Bacterial Pathogenesis. A Molecular Approach**. ASM Press, Washington, DC, 1994.
7. Tortora, G. J., B. R. Funke, and C. L. Case. **Microbiology, An Introduction**. (7th edition) Benjamin Cummings, San Francisco, 2002.

